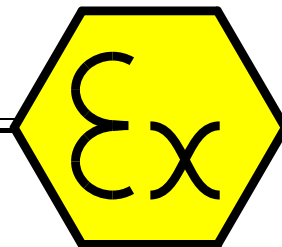


Manual



Power supply SG160



manual_SG160_z2-z21.doc, Rev. 4



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1 Safety Guidelines for explosion proof devices

Application and Standards

This instruction manual applies to explosion protected control systems of protection types below. This apparatus is only to be used as defined and meets requirements of EN 60 079 particularly EN60 079-14 "electrical apparatus for potentiality explosive atmospheres".

It can be used in hazardous locations which are hazardous due to gases and vapours according to the explosion group and temperature class as stipulated on the type label. When installing and operating the explosion protected device as well as its periphery, the respective nationally valid regulations and requirements have to be observed.

General Instructions

Work on electrical installations and apparatus in operation is generally forbidden in hazardous locations, with the exception of intrinsically safe circuits. In special cases, work can be done on non-intrinsically safe circuits, on the condition that during the duration of such work no explosive atmosphere exists. Only explosion protected certified measuring instruments may be used to ensure that the apparatus is voltage-free. Grounding and short circuiting may only be carried out, if there is no explosion hazard at the grounding or short circuit connection.

The control unit has to have a back-up fuse as stipulated. The mains connection must have a sufficient short circuit current to ensure safe breaking of the fuse. To achieve an impeccable and safety device operation, please take care for adept transportation, storage and mounting, as well as accurate service and maintenance. Operation on this device should only be implemented by authorised persons and in strict accordance with local safety standards.

The electrical data on the type label and if applicable, the "special conditions" of the test certificate TÜV 01 ATEX 1693 is to be observed.

For outdoor installation it is recommended to protect the explosion protected distribution and control system against direct climatic influence, e.g. with a protective roof. The maximum ambient temperature is 140°F (60°C) at T4, if not stipulated otherwise (please note temperature classes of hazardous area and refer to EC- type certificate)

Terminal compartment in Increased Safety

When closing, it is to be ensured that the gaskets of the terminal compartment remain effective, thus maintaining degree of protection IP 54. Unused entries are to be closed off by impact proof stopping plugs, which are secured against self-loosening and turning.

Maintenance Work

The gaskets of all parts of the housings have to be checked for damages and replaced, if required. Terminals have to be tightened correctly. Possible changes in colour point to increased temperature. Cable glands, stopping plugs and flanges have to be tested for tightness and secure fitting.

Intrinsically Safe Circuits

Installation instructions in the testing certificates of intrinsically safe apparatus have to be observed. The electrical safety values stipulated on the type plate must not be exceeded. This is also important at the intrinsically safe circuits. When interconnecting intrinsically safe circuits it is to be tested, whether a voltage and/or current addition occurs. The intrinsic safety of interconnected circuits is to be ensured!

2 Power supply SG160

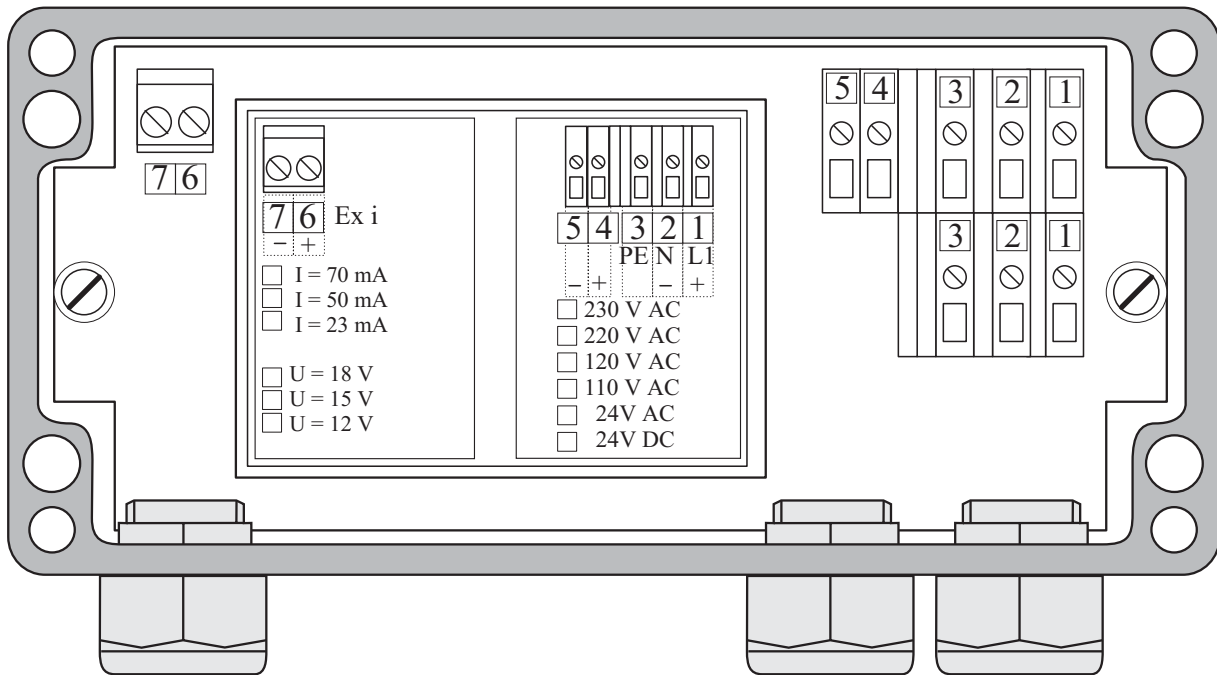
2.1 Short description

The intrinsically safe power supply unit SG 160 is suitable for the assembly within the ex of range (zone 1). The intrinsically safe output current circle, the category ib, has a rechteckförmige characteristic. The output voltage amounts to 15 and/or 12V with an output current of 50 and/or 70 mA.

The power supply unit possesses entrance clamps of the enclosure „increased security “and is inserted in a clamp housing of the same enclosure. Thus the mains voltage can be applied directly to the food equipment - a further ex e - clamp housing is void.

Optionally the power supply unit SG 160 with a control inlet is available. An active not intrinsically safe signal of 8..30V switches the output voltage in and out.

2.2 Clamp picture



3 Appendix

3.1 Technical details and clamp limit values

Mains voltage [V]	AC: 230, 120, 24; 48.,62 cycles per second	DC: 24			
Capacity	2 W				
Group of equipment	II 2 G, II 2 D				
Kind of explosion protection	II 2 G EEx e m [ib] IIC T5 with Y9 to 40°C II 2 G EEx e m [ib] IIC T4 with Y9 to 65°C II 2 D ex tD [ibD] A21 IP 66 T135°C				
Assembly	Within ex range				
intrinsically safe		U □18V	U □15V	U □12V	U □10V
Output current circle	I = 100 mA				SG160.x.7.x
	I = 70 mA	-	SG160.x.0.x	SG160.x.2.x	
	I = 50 mA	-	SG160.x.1.x	SG160.x.3.x	
	I = 25 mA	SG160.x.4.x	SG160.x.5.x	SG160.x.6.x	
Control inlet	logic 1 8..30V;	logic 0 0... 2V		U0 < 40V	
Housing enclosure	IP65				
Encasing material	Polyester				
Ambient temperature	- 20°C... 65°C with temperature class T4 - 20°C... 40°C with temperature class T5				

3.2 Clamp limit values

Min. and max. clamping torque	min. 0,3 Nm max. 0,4 Nm
Min. and Max. wire cross- section	steep: 0,2 – 2,5 mm ² flexible: 0,2 – 2,5 mm ²

Table 1: Mechanical limit values of the Ex e clamps

SG	160.x.0.x	160.x.1.x	160.x.2.x	160.x.3.x	160.x.4.x	160.x.5.x	160.x.6.x	160.x.7.x
Uo	16.8 V	16.8 V	12.6 V	12.6 V	20 V	16.8 V	12.6 V	10.5 V
IO	80 mA	58 mA	80 mA	58 mA	27 mA	27 mA	27 mA	110 mA
Po	1340 mW	947 mW	1000 mW	731 mW	540 mW	454 mW	341 mW	1155 mW

Table 2 ex limit values of the clamps 6 and 7

Enclosure	Lo [mH]	CO [nF]	Lo [mH]	CO [nF]	Lo [mH]	CO [nF]	Lo [mH]	CO [nF]	Lo [mH]	CO [nF]	Lo [mH]	CO [nF]	Lo [mH]	CO [nF]	Lo [mH]	CO [nF]
EEx ib IIC	0,17	140	0,5	130	0,15	700	0,15	480	0,15	110	2	200	1	360	0,2	1200
			0,9	100	0,5	240	0,5	270	1	100	5	150	2	300	0,5	750
					1	190	1	240	2	70			5	200	1	480
EEx ib IIB	1	590	2	560	1	1200	1	1300	0,15	1000	0,5	2000	0,15	5000	0,5	5400
	2	490	5	340	2	960	2	1100	5	500	5	1000	5	2000	2	2900
	5	250	10	270	5	520	5	690							5	1600
Ex ibD	2	1150	4	1120	2	2400	2	2600	0,5	1500	1	4000	0,5	7500	1	9000
	4	980	10	680	4	1920	4	2200	10	1000	10	2000	10	4000	4	5800
	10	500	20	540	10	1040	10	1380							10	3200

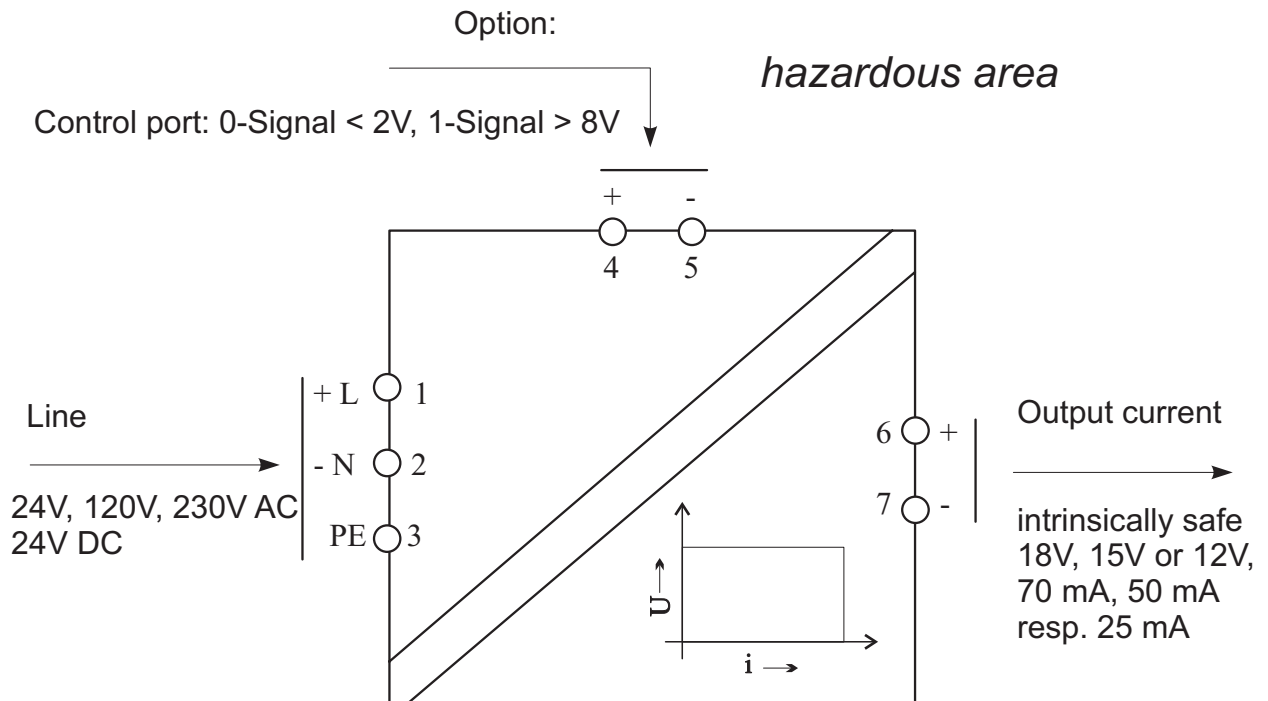
Table 3 permissible inductances and capacities

3.3 Type code

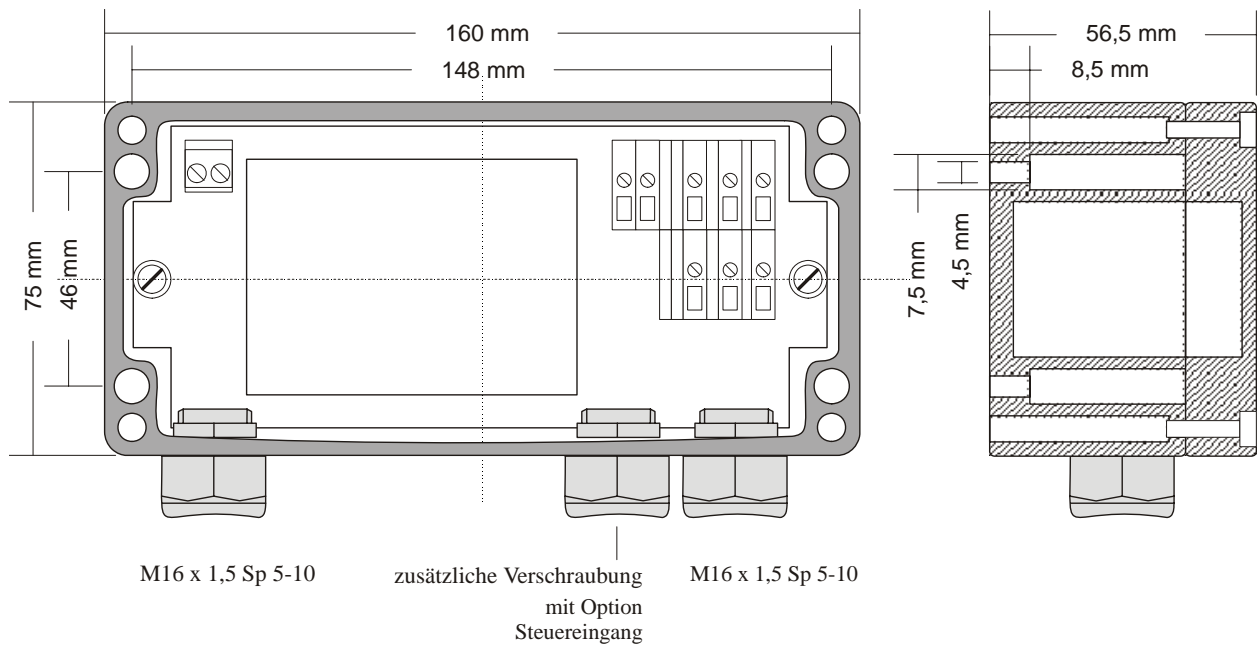
		Power supply SG160
Mains voltage:		
230V AC0
220V AC1
120V AC2
110V AC3
24V AC5
24V DC6
Power output		
15V DC, 70mA0
15V DC, 50mA1
12V DC, 70mA2
12V DC, 50mA3
18V DC, 25mA4
15V DC, 25mA5
12V DC, 25mA6
Control inlet:		
without0
available1

The order from additional clamps to grinding through the mains voltage in the plain language indicate

3.4 Block diagram



3.5 Dimensions

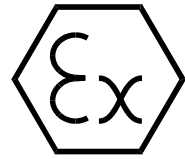


(1) **EC- TYPE- EXAMINATION CERTIFICATE**
(Translation)

(2) Equipment and protective systems intended for use in potential explosive Atmospheres – **Directive 94/9/EC**

(3) EC- type- examination Certificate number

TÜV 01 ATEX 1693



(4) Equipment: Ex-i power supply SG 160...

(5) Manufacturer: Gönzheimer Elektronik GmbH

(6) Address: D-Neustadt/Weinstraße, Dr. Julius Leber-Str. 2

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV Hannover/Sachsen-Anhalt e.V., TÜV CERT-Zertifizierungsstelle, notified body No. 0032 in accordance with Article 9 of the Council Directive 94/9/EC of March 1994, certifies that equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report No. 01 PX 07210

(9) Compliance with to essential Health and Safety Requirements has been assured by compliance with:

EN 50 014:1997 EN 50 019 : 1994 EN 50 020:1994 EN 50 028:1988

(10) If the sign “X” is places after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC- type- examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:

 **II 2 G EEx e m [ib] IIC T5**

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Hannover, 12.03.2001



Der Leiter

(13)

SCHEDULE

(14) **EC- TYPE-Examination CERTIFICATE No. TÜV 01 ATEX 1693**

(15) Description of equipment

The Ex-i power supply SG 160 ... serves inside hazardous areas as a power supply of intrinsically safe current circuits in explosive endangered areas for equipment of category 2 respectively 3.

The maximum ambient temperature is 40°C in temperature class T5 and 65°C in the temperature class T4.

Electrical details

All non intrinsically safe terminals have the explosion protection “increased safety”.

Supply circuit (Terminal 1 to 3) U = 230/220/120/110/24 V AC, bzw. U = 24 V DC
U_M = 253 V AC

Control port (Terminal 4, 5) U_M = 40 V AC

Output current (Terminal 6,7) approved for intrinsical safety EEx ib IIC
the maximum capacity and inductance are listed on the following table

Type	SG160.x.0.x	SG160.x.1.x	SG160.x.2.x	SG160.x.3.x	SG160.x.4.x	SG160.x.5.x	SG160.x.6.x
U ₀	16,8V	16,8V	12,6V	12,6V	20V	16,8V	12,6V
I ₀	80mA	58mA	80mA	58mA	27mA	27mA	27mA
P ₀	1340mW	974mW	1000mW	731mW	540mW	454mW	341mW

group	Type SG160.x.0.x		Type SG160.x.1.x		Type SG160.x.2.x		Type SG160.x.3.x		Type SG160.x.4.x		Type SG160.x.5.x		Type SG160.x.6.x	
	L ₀ [mH]	C ₀ [nF]	L ₀ [mH]	C ₀ [nF]	L ₀ [mH]	C ₀ [nF]	L ₀ [mH]	C ₀ [nF]	L ₀ [mH]	C ₀ [nF]	L ₀ [mH]	C ₀ [nF]	L ₀ [mH]	C ₀ [nF]
IIC	0,26	140	0,5	130	0,15	700	0,15	480	0,15	150	2	200	1	500
			1	100	0,5	240	0,5	270	1	100	5	150	2	300
					1	190	1	240	2	70			5	200
IIB	1	590	2	560	1	1200	1	1300	0,15	1000	0,5	2000	0,15	5000
	2	490	5	340	2	960	2	1100	5	500	5	1000	5	2000
	5	250	10	270	5	520	5	690						

All types have a rectangular characteristic

The intrinsically safe output current is safe galvanically separated up to a nominal voltage of 375 V to every remaining current circuit.

Schedule EC- Type- Examination Certificate No. TÜV 01 ATEX 1693

- (16) Report No. 01 PX 07210

- (17) Special conditions for safe area
None

- (18) Essential health and safety requirements
No additional



1. Amendment to

EC- TYPE-Examination CERTIFICATE No. TÜV 01 ATEX 1693

Of company Gönzheimer Elektronik GmbH
 Dr. Julius Leberstr. 2
 D- 67433 Neustadt an der Weinstraße

The Ex-i power supply type SG 160... may be manufactured and operated in the future according to the documents listed in the test report.

The changes concern the extension of the SG160 series by the type SG160.x.7.x and the employment of the product in areas with combustible dust.

The marking shall include the following:

II 2 D Ex tD [ibD] A21 IP 66 T135°C

with the test docs **prEN 61241-0:2002, prEN61241-1:2002 and IEC 31H/130/CD:2001**

Electrical data:

All not intrinsically safe connections are in the protection type "increased safety" respectively „protection by housing" implemented.

Supply circuit (Terminals 1 up to 3) $U = 230/220/120/110/24 \text{ V AC}$, resp. $U=24 \text{ V}$
 $U_m = 253 \text{ V AC}$

Control input (Terminals 4 and 5) $U_m = 40 \text{ V}$

Outputs circuit (Terminals 6 und 7) protection type "intrinsic safe" EEx ib IIC / Ex ibD
 the maximum values and to maximum permissible capacity expresses resp. Inductance are to be taken from the table:

SG	160.x.0.x		160.x.1.x		160.x.2.x		160.x.3.x		160.x.4.x		160.x.5.x		160.x.6.x		160.x.7.x	
U_o	16,8 V		16,8 V		12,6 V		12,6 V		20 V		16,8 V		12,6 V		10,5 V	
I_o	80 mA		58 mA		80 mA		58 mA		27 mA		27 mA		27 mA		110 mA	
P_o	1340 mW		947 mW		1000 mW		731 mW		540 mW		454 mW		341 mW		1155 mW	
Schutz art	L_o [mH]	C_o [nF]	L_o [mH]	C_o [nF]	L_o [mH]	C_o [nF]	L_o [mH]	C_o [nF]	L_o [mH]	C_o [nF]	L_o [mH]	C_o [nF]	L_o [mH]	C_o [nF]	L_o [mH]	C_o [nF]
EEx ib IIC	0,17	140	0,5	130	0,15	700	0,15	480	0,15	110	2	200	1	360	0,2	1200
			0,9	100	0,5	240	0,5	270	1	100	5	150	2	300	0,5	750
					1	190	1	240	2	70			5	200	1	480
EEx ib IIB	1	590	2	560	1	1200	1	1300	0,15	1000	0,5	2000	0,15	5000	0,5	5400
	2	490	5	340	2	960	2	1100	5	500	5	1000	5	2000	2	2900
	5	250	10	270	5	520	5	690							5	1600
Ex ibD	2	1150	4	1120	2	2400	2	2600	0,5	1500	1	4000	0,5	7500	1	9000
	4	980	10	680	4	1920	4	2200	10	1000	10	2000	10	4000	4	5800
	10	500	20	540	10	1040	10	1380							10	3200

Characteristics of all types: rectangular

1. Amendment to EC- TYPE-Examination CERTIFICATE No. TÜV 01 ATEX 1693



The output current circuit is surely electrically isolated from all remaining electric circuits to a peak value of the rated voltage of 375 V.

All remaining data remain unchanged.

The test documentation is listed in test report Nr. 04YEX551218

TÜV NORD CERT GmbH & Co. KG
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Hannover, 03.02.2004

A handwritten signature in blue ink, appearing to read 'G. K. W. K. W. K.', written in a cursive style.

Der Leiter